

~~a curing system operative to apply at least one of a plurality of curing environments simultaneously to each of a plurality of regions associated with the at least one coating layer;~~

a plurality of coating materials suitable for forming at least one coating layer;

a controller operable for controlling quantities of the plurality of coating materials;

a mixer operable for mixing the plurality of coating materials;

one or more substrate comprising a plurality of predefined regions operable for receiving the plurality of coatings;

a coating system operable for delivering the plurality of materials to the substrate either incrementally or continuously;

a spatial mask;

a curing system operable for providing a plurality of curing environments;

a thermal gradient curing element; and

a testing device;

wherein the combinatorial coating library comprises a predetermined combination of at least one of the plurality of coating materials and at least one of the plurality of curing environments associated with each of the plurality of predefined regions; and

wherein the thermal gradient curing element has a constant or variable temperature distribution along a dimension of the thermal gradient curing element.

[c02] (Original) The system of claim 1, wherein the curing system is operable to apply substantially the same predetermined one of the plurality of curing environments to each of the plurality of regions associated with the at least one coating layer of the one or more substrates.

[c03] (Original) The system of claim 1, wherein the curing system is operable to apply a substantially different predetermined one of the plurality of curing environments to each of the plurality of regions associated with the at least one coating layer of the one or more substrates.

[c04] (Previously Amended) The system of claim 1, wherein the plurality of materials further comprise a material selected from the group consisting of polymeric materials and oligomeric materials.

[c05] (Original) The system of claim 1, wherein the coating system further comprises a coating system selected from the group consisting of a spray/vapor coating system, spin coating system, dip coating system, flow coating system, and draw-down coating system.

[c06] (Cancelled).

[c07] (Cancelled).

[c08] (Cancelled).

[c09] (Cancelled).

[c10] (Currently Amended) The system of claim 6 1, wherein the heating thermal gradient curing element has a geometrical shape which is a predetermined function along the length of the heating thermal gradient curing element.

[c11] (Cancelled).

[c12] (Cancelled).

[c13] (Cancelled).

[c14] (Cancelled).

[c15] (Cancelled).

[c16] (Cancelled).

[c17] (Currently Amended) A system for creating a combinatorial coating library, comprising:

a coating system operatively coupled to at least one of a plurality of materials suitable for forming at least one coating layer on a surface of one or more substrates; and

a curing system operative to apply at least one of a plurality of curing environments simultaneously to each of a plurality of regions associated with the at least one coating layer, wherein the plurality of curing environments include a curing environment selected from the group consisting of thermal radiation, ultraviolet radiation, visible radiation, microwave radiation, electron beam radiation, laser radiation, and humidity, the curing system comprising a spatial mask having an elongate surface positioned between a curing source and the at least one coating layer, wherein a radiation transmission characteristic varies along a dimension of the elongate surface of the spatial mask; and

a thermal gradient heating element for providing continuous or variable heat across the one or more substrates;

wherein the combinatorial coating library comprises a predetermined combination of at least one of the plurality of materials and at least one of the plurality of curing environments associated with each of the plurality of regions.

[c18] (Previously Amended) The system of claim 17, wherein the coating system further comprises a coating system selected from the group consisting of a spray and vapor coating system, spin coating system, dip coating system, flow coating system, and draw-down coating system.

[c19] (Currently Amended) The system of claim 17, wherein said coating system further comprises a dip-coating apparatus having a plurality of substrate holders and a corresponding plurality of wells, the plurality of substrate holders and the plurality of wells relatively positionable to immerse a plurality of substrates secured by the plurality

of substrate holders within at least one of the plurality of materials disposed within the plurality of wells.

[c20] (Original) The system of claim 19, further comprising a plurality of substrates each secured by one of the plurality of substrate holders, each of the plurality of substrates comprising an acoustic wave transducer having a first acoustic wave parameter and a second acoustic wave parameter, the first acoustic wave parameter corresponding to a first amount of coating or viscoelastic property of the coating layer, the second acoustic wave parameter corresponding to a second amount of coating or viscoelastic property of the coating layer.

[c21] (Currently Amended) The system of claim 17, wherein each of the plurality of curing environments comprises one of a plurality of curing sources and one of a plurality of curing characteristics, wherein the curing system is operable to apply substantially the same curing source in combination with a substantially different predetermined one of the plurality of curing characteristics to each region associated with the coating layer.

*C7  
C17  
Cont'd*

[c22] (Currently Amended) The system of claim 17, wherein each of the plurality of curing environments comprises one of a plurality of curing sources and one of a plurality of curing characteristics, wherein the curing system is operable to apply a substantially different curing source in combination with a substantially different predetermined one of the plurality of curing characteristics to each region associated with the coating layer.

[c23] (Currently Amended) The system of claim 17, wherein one of the plurality of curing environments associated with at least one coating layer further comprises a scanning mirror system having a mirrored surface positionable relative to an incoming radiation beam, wherein the mirrored surface is positionable to direct the incoming radiation beam to a selected one of the plurality of regions associated with the coating layer.

[c24] (Currently Amended) The system of claim 17, wherein one of the plurality of curing environments associated with at least one coating layer further comprises a plurality of waveguides each having a first end corresponding to one of the plurality of

regions associated with the coating layer and a second end associated with a curing source.

[c25] (Currently Amended) The system of claim 17, wherein one of the plurality of curing environments associated with at least one coating layer further comprises a heating source in thermal communication with an elongate heating element operably positionable adjacent to the plurality of substrates, wherein the elongate heating element has a modulated heat transmissibility characteristic.

[c26] (Original) A system for creating a combinatorial coating library, comprising:

a plurality of substrates each secured by one of a plurality of substrate holders, each of the plurality of substrates comprising an acoustic wave transducer having a first acoustic wave parameter and a second acoustic wave parameter, the first acoustic wave parameter corresponding to a first amount of coating or viscoelastic property of a coating layer on the substrate, the second acoustic wave parameter corresponding to a second amount of coating or viscoelastic property of the coating layer on the substrate;

*C<sup>2</sup>*  
a coating system operatively coupled to at least one of a plurality of materials for forming a coating layer on a surface of each of the plurality of substrates, the coating system comprising a dip-coating apparatus having a plurality of substrate holders and a corresponding plurality of wells, the plurality of substrate holders and the plurality of wells relatively positionable to immerse the plurality of substrates secured by the plurality of substrate holders within at least one of the plurality of materials disposed within the plurality of wells; and

a curing system operative to apply at least one of a plurality of curing environments to each of a plurality of regions associated with the coating layer;

wherein the combinatorial coating library comprises a predetermined combination of at least one of the plurality of materials and at least one of the plurality of curing environments associated with each of the plurality of regions.

*Claims 21 - 31 withdrawn, 32 canceled, 33 withdrawn*

[c34] (Cancelled).

*[c35] withdrawn*

[c36] (Currently Amended) A method for using a combinatorial coating library, comprising the steps of:

selectively applying at least one of a plurality of materials suitable for forming at least one coating layer to a surface of one or more substrates; and

selectively applying at least one of a plurality of curing environments simultaneously simultaneously each of a plurality of regions associated with the at least one coating layer; and

curing continuously or variably using an elongate heating element operably positionable adjacent to the one or more substrates, wherein the elongate heating element has a variable heat distribution characteristic along a dimension of the heating element;

wherein the combinatorial coating library comprises a predetermined combination of at least one of the plurality of materials and at least one of the plurality of curing environments associated with each of the plurality of regions.

[c37] (Previously Amended) The method of claim 36, wherein selectively applying at least one of the plurality of curing environments to each of the plurality of regions further comprises selectively applying substantially the same predetermined one of the plurality of curing environments to each of the plurality of regions associated with the at least one coating layer of the one or more substrates.

[c38] (Previously Amended) The method of claim 36, wherein selectively applying at least one of the plurality of curing environments to each of the plurality of regions further comprises selectively applying a substantially different predetermined one of the plurality of curing environments to each of the plurality of regions associated with the at least one coating layer of the one or more substrates.

[c39] (Previously Amended) The method of claim 36, wherein the plurality of materials further comprise a material selected from the group consisting of polymeric materials and oligomeric materials.

[c40] (Cancelled).

[c41] (Cancelled).

[c42] (Previously Amended) The method of claim 36, wherein selectively applying at least one of a plurality of curing environments to each of a plurality of regions associated with the at least one coating layer, includes using a spatial mask having an elongate surface, said spatial mask having a radiation transmission characteristic which varies along a dimension of the elongate surface of said spatial mask.

*17  
Cited  
Cancelled*

[c43] Withdrawn

[c44] (Previously Amended) A method for using a combinatorial coating library, comprising the steps of:

providing a plurality of materials for forming a coating layer on a surface of a substrate;

providing a dip-coating apparatus having a plurality of substrate holders and a corresponding plurality of wells, the plurality of substrate holders and the plurality of wells relatively positionable to immerse a plurality of substrates secured by the plurality of substrate holders within at least one of the plurality of materials disposed within the plurality of wells; and

providing at least one of a plurality of curing environments to each of a plurality of regions associated with the coating layer;

wherein the combinatorial coating library comprises a predetermined combination of at least one of the plurality of materials and at least one of the plurality of curing environments associated with each of the plurality of regions.

[c45] Withdrawn

[c46] (Previously Amended) The method of claim 44, further comprising sequentially depositing the at least one material and applying the at least one curing environment to form a multi-layer coating, wherein the sequence of depositing and applying comprises a coating and curing sequence selected from a plurality of coating and curing sequences.

[c47] Withdrawn

[c48] (Cancelled).

[c49-51] Withdrawn

---